1. A process for manufacturing a bottom spin valve, comprising:

providing a bottom magnetic shield;

on said bottom magnetic shield, depositing, to a thickness between about 80 and 120 Angstroms, a first layer of aluminum oxide;

on the first layer of aluminum oxide, depositing, to a thickness between about 40 and 60 Angstroms, a first layer of an insulating material having a dielectric breakdown voltage that is as least 5 times that of aluminum oxide, whereby said first aluminum oxide and high voltage breakdown layers together constitute a lower dielectric layer whose total thickness is less than about 150 Angstroms;

forming on the lower dielectric layer a spin valve structure whose top layer is a free layer;

on said free layer, depositing, to a thickness between about 15 and 25 Angstroms, a second layer of an insulating material having a dielectric breakdown voltage that is as least 5 times that of aluminum oxide;

on the second high voltage breakdown layer, depositing a second layer of aluminum oxide to a thickness between about 80 and 120 Angstroms, thereby forming, together with said second high breakdown layer, an upper dielectric layer whose thickness is between about 140 and 160 Angstroms; and

on the upper dielectric layer, depositing an upper magnetic shield layer, thereby completing the manufacture of a spin valve structure having a minimum separation between its upper and lower magnetic shields that is less than 700 Angstroms.

2. The process recited in claim 1 wherein the high breakdown voltage breakdown material is selected from the group consisting of tantalum oxide, tantalum nitride, aluminum nitride, and zirconium oxide.

3. The process recited in claim 1 wherein the high breakdown voltage breakdown layer is formed by depositing a layer of tantalum and then converting it to tantalum oxide through plasma oxidation.

4. The process recited in claim 1 wherein the high breakdown voltage breakdown layer is formed by depositing a layer of tantalum nitride through reactive sputtering of a tantalum target in an argon/nitrogen mix.

5. A process for manufacturing a bottom spin valve structure, comprising:

providing a lower magnetic shield layer;

on said lower magnetic shield layer, depositing, to a thickness between about 80 and 100 Angstroms, a first layer of aluminum oxide;

on the first layer of aluminum oxide, depositing, to a thickness between about 15 and 25 Angstroms, a first layer of tantalum;

by means of plasma oxidation, converting said first tantalum layer to a first tantalum oxide layer, whereby said first aluminum oxide and tantalum oxide layers constitute a lower dielectric layer whose total thickness is less than about 150 Angstroms;

on the lower dielectric layer, depositing a first layer of nickel-chromium;

on the first layer of nickel-chromium depositing a four layer laminate, whose bottom layer is manganese platinum, that is a synthetic anti-ferromagnet suitable for use as a pinned layer in said spin valve;

on said pinned layer, depositing a layer of non-magnetic material;

on said non-magnetic layer, depositing a three layer laminate that is suitable for use as a free layer in said spin filter spin valve;

patterning and etching the structure to form a pair of parallel first trenches that are separated by a first distance and that extend part way through the free layer;

on only the free layer inside the first trenches, depositing additional material that is the same as that used to form the free layer;

successively depositing a layer of an antiferromagnetic material, a second layer of nickel-chromium, and a conductive layer, thereby providing a longitudinal bias to said spin valve;

patterning and etching the structure to form a pair of second trenches, parallel to the first trenches and separated from each other by a second distance that is greater than said first distance, and extending downwards into said manganese-platinum layer;

filling only the second trenches with material suitable for use as conductive leads;

over the entire structure, forming a second layer of tantalum oxide to a thickness between about 40 and 60 Angstroms;

over the second layer of tantalum oxide, depositing a second layer of aluminum

oxide to a thickness between about 80 and 120 Angstroms, thereby forming an upper dielectric layer; and

on the upper dielectric layer, depositing an upper magnetic shield layer, thereby completing the manufacture of a bottom spin valve structure that has a minimum separation between its upper and lower magnetic shields that is less than 700 Angstroms.

6. A process for manufacturing a bottom spin valve structure, comprising:

providing a lower magnetic shield layer;

on said lower magnetic shield layer, depositing, to a thickness between about 80 and 120 Angstroms, a first layer of aluminum oxide;

on the first layer of aluminum oxide, depositing, to a thickness between about 40 and 60 Angstroms, a layer of tantalum nitride, whereby said first aluminum oxide and tantalum nitride layers constitute a lower dielectric layer whose total thickness is less than about 150 Angstroms;

on the lower dielectric layer, depositing a first layer of nickel-chromium;

on the first layer of nickel-chromium depositing a four layer laminate, whose bottom layer is manganese platinum, that is a synthetic anti-ferromagnet suitable for use as a pinned layer in said spin valve;

on said pinned layer, depositing a layer of non-magnetic material;

on said non-magnetic layer, depositing a three layer laminate that is suitable for use as a free layer in said spin filter spin valve;

patterning and etching the structure to form a pair of parallel first trenches that are separated by a first distance and that extend part way through the free layer;

on only the free layer inside the first trenches, depositing additional material that is the same as that used to form the free layer;

successively depositing a layer of an antiferromagnetic material, a second layer of nickel-chromium, and a conductive layer, thereby a longitudinal bias to the spin valve;

patterning and etching the structure to form a pair of second trenches, parallel to the first trenches and separated from each other by a second distance that is greater than said first distance, and extending downwards into said manganese-platinum layer;

filling only the second trenches with material suitable for use as conductive leads;

over the entire structure, depositing a layer of tantalum oxide to a thickness between about 40 and 60 Angstroms;

over said tantalum oxide layer depositing a second layer of aluminum oxide to a thickness between about 80 and 120 Angstroms, thereby forming, together with said second tantalum oxide layer, an upper dielectric layer; and

on the upper dielectric layer, depositing an upper magnetic shield layer, thereby completing the manufacture of a bottom spin valve structure that has a minimum separation between its upper and lower magnetic shields that is less than 700 Angstroms.

7. The process recited in claim 6 wherein said tantalum nitride layer is formed through reactive sputtering of a tantalum target in an argon/nitrogen mix.

8. A magnetic read head, comprising:

a bottom magnetic shield;

on said bottom magnetic shield, a first layer of aluminum oxide between about 80 and 120 Angstroms thick;

on the first layer of aluminum oxide, a first layer of an insulating material having a thickness between about 40 and 60 Angstroms and a dielectric breakdown voltage that is as least 5 times that of aluminum oxide, said first aluminum oxide layer and the high voltage breakdown layer together constituting a lower dielectric layer whose total thickness is less than about 150 Angstroms;

on the lower dielectric layer, a spin valve structure;

on said spin valve structure a second layer of an insulating material having a thickness between about 40 and 60 Angstroms and a dielectric breakdown voltage that is at least 5 times that of aluminum oxide;

on the second high voltage breakdown layer, a second layer of aluminum oxide having a thickness between about 80 and 120 Angstroms, the second aluminum oxide layer together with said second high breakdown layer constituting an upper dielectric layer whose thickness is between about 140 and 160 Angstroms; and

on the upper dielectric layer, an upper magnetic shield layer whereby the magnetic read head has a minimum separation between its upper and lower magnetic shields that is less than 700 Angstroms.

9. The read head described in claim 8 wherein the high breakdown voltage breakdown material is selected from the group consisting of tantalum oxide, tantalum nitride, aluminum nitride, and zirconium oxide.

10. A magnetic read head, comprising:

a lower magnetic shield layer;

on said lower magnetic shield layer, a first layer of aluminum oxide having a thickness between about 80 and 120 Angstroms;

on the first layer of aluminum oxide, a first layer of tantalum oxide having a thickness between about 40 and 60 Angstroms, whereby the first aluminum oxide and tantalum oxide layers constitute a lower dielectric layer whose total thickness is less than about 150 Angstroms;

on the lower dielectric layer, a first layer of nickel-chromium;

on the first layer of nickel-chromium, a four layer laminate, whose bottom layer is manganese platinum, that is a synthetic anti-ferromagnet suitable for use as a pinned layer in a spin valve;

on said pinned layer, a layer of non-magnetic material;

on said non-magnetic layer, a three layer laminate that serves as a free layer in said spin valve;

a pair of parallel first trenches that are separated by a first distance and that extend downwards part way through the free layer;

only on the free layer inside the first trenches, additional free layer material;

only on the free layers inside the first trenches, a layer of antiferromagnetic material;

only on the layer of antiferromagnetic material, a second layer of nickel-chromium, said antiferromagnetic and second nickel chromium layers serving to provide longitudinal bias for the spin valve;

only on the second layer of nickel chromium, a conductive layer, said antiferromagnetic, second nickel chromium and conductive layers being disposed so as to have parallel, inward-looking, sloping sidewalls;

only on said sidewalls and second copper layer, a second layer of tantalum between about 20 and 30 Angstroms thick;

parallel to the first trenches, a pair of second trenches separated from each other by a second distance that is greater than said first distance, extending downwards into said manganese-platinum layer and filled with material suitable for use as conductive leads;

over the conductive leads, the second tantalum oxide layer, a second layer of aluminum oxide between about 80 and 120 Angstroms thick; and

on the second aluminum oxide layer, an upper magnetic shield layer whereby there is a minimum separation between the upper and lower magnetic shields that is less than 700 Angstroms.

11. The read head described in claim 10 wherein said four layer laminate consists of between about 20 and 25 Angstroms of cobalt iron which is on between about 6 and 9 Angstroms of ruthenium which is on between about 15 and 20 Angstroms of cobalt iron which is on between about 100 and 150 Angstroms of manganese platinum.

12. The read head described in claim 10 wherein said three layer laminate consists of between about 5 and 10 Angstroms of copper which is on between 15 and 20 Angstroms of nickel iron which is on between about 5 and 10 Angstroms of cobalt iron.

13. A magnetic read head, comprising:

a lower magnetic shield layer;

on said lower magnetic shield layer, a first layer of aluminum oxide having a thickness between about 80 and 100 Angstroms;

on the first layer of aluminum oxide, a layer of tantalum nitride having a thickness between about 40 and 60 Angstroms, whereby the first aluminum oxide and tantalum nitride layers constitute a lower dielectric layer whose total thickness is less than about 150 Angstroms;

on the lower dielectric layer, a first layer of nickel-chromium;

on the first layer of nickel-chromium, a four layer laminate, whose bottom layer is manganese platinum, that is a synthetic anti-ferromagnet suitable for use as a pinned layer in a spin valve;

on said pinned layer, a layer of non-magnetic material;

on said non-magnetic layer, a three layer laminate that serves as a free layer in said spin valve;

a pair of parallel first trenches that are separated by a first distance and that extend downwards part way through the free layer;

only on the free layer inside the first trenches, additional free layer material;

only on the free layers inside the first trenches, a layer of antiferromagnetic material;

only on the layer of antiferromagnetic material, a second layer of nickel-chromium, said antiferromagnetic and second nickel chromium layers serving to provide longitudinal bias for the spin valve;

only on the second layer of nickel chromium, a conductive layer, said antiferromagnetic, second nickel chromium and second copper layers being disposed so as to have parallel, inward-looking, sloping sidewalls;

only on said sidewalls and conductive layer, a layer of tantalum between about 25 and 30 Angstroms thick;

parallel to the first trenches, a pair of second trenches separated from each other by a second distance that is greater than said first distance, extending downwards into said manganese-platinum layer and filled with material suitable for use as conductive leads;

over the entire structure, a second layer of tantalum oxide between about 40 and

60 Angstroms thick; and

on the second tantalum oxide layer second aluminum oxide layer, between about 80 and 120 Angstroms thick, an upper magnetic shield layer whereby there is a minimum separation between the upper and lower magnetic shields that is less than 700 Angstroms.

14. The read head described in claim 13 wherein said four layer laminate consists of between about 10 and 25 Angstroms of cobalt iron which is on between about 6 and 8 Angstroms of ruthenium which is on between about 15 and 20 Angstroms of cobalt iron which is on between about 100 and 150 Angstroms of manganese platinum.

15. The read head described in claim 13 wherein said three layer laminate consists of between about 5 and 10 Angstroms of copper which is on between about 15 and 20 Angstroms of nickel iron which is on between about 5 and 10 Angstroms of cobalt iron.